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17 September, 2001
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re: **JEFFREY JOHN SHARP**
International Application No. PCT/NZ00/00110
IMPROVEMENTS TO TRAILER BRAKING SYSTEMS
Our Ref: 17731/28X096 ED

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I refer to the written opinion of 8 August 2001.

In response is enclosed an amended claim set, with amendments made to claims 1, 4 and 21.

US 4,295,687 (Becker *et al*, 1981) consists of a mechanically complex sensor that converts pedal pressure to displacement via a spring, pedal pad, hinge pin and pivoting plates (column 6, lines 6-10).

The pressure transducer assembly described in the Becker invention consists of a complex and bulky arrangement which must attach to the brake pedal. The mechanical movement of the various components also means the Becker invention is subject to wear, and as such a failure of any of these moving components would likely result in a failure of the braking system.

By comparison, the subject invention is a substantially static laminate, only a fraction of a millimetre thick. This allows the laminate to be placed on or in the close vicinity of the brake pedal without effecting a noticeable physical change to the brake pedal. Another advantage of using laminate is that there are no moveable parts, meaning minimal, if any, maintenance is required.

The pressure sensed by the Becker invention is dependent on the position of the pedal pad (143) with respect to the base plate (141), wherein as pressure is applied to the pedal pad an extension is moved relative to the plunger of the variable potentiometer (30) (column 6 lines 8-15).

In the Becker invention the position of the pedal pad is maintained by a spring (147), which is prone to wear and tear. Variations in spring strength, resilience of the spring over time and even installation and calibration of the spring may cause variations in the pedal pad free play, meaning the braking force sensed at the potentiometer may not correspond accurately to the braking force applied to the towing vehicle.

The Becker invention also does not disclose the feature "laminate". The Collins English dictionary (1994), 3rd Edition, pp 872-873 Great Britain: HarperCollins Publishers defines the word "laminate" as:

Laminate *n.* a material made by bonding together two or more sheets.

A further definition can be found in The Concise Oxford dictionary of current English (1991), 8th Edition, p. 663 New York: Oxford University Press:

Laminate *n.* a laminated structure or material, esp. of layers fixed together to form rigid or flexible material.

A still further definition can be found in Chambers Science and Technology Dictionary (1992), New Edition, p. Edinburgh: W & R Chambers Ltd:

Laminate (*Eng.*). A structural member made up of two or more components bonded together, like two sheets separated by a honeycomb.

Items 141, 147, and 149 shown in figure 9 of the Becker invention are not laminates as per the dictionary definitions or definitions used in the art. Column 6, lines 6-27 of the Becker specification as cited by the examiner makes no mention of the base plate, spring or extension as being a laminate. Figure 9 of the Becker invention also does not show items 141, 147, 149 as being laminates. They do not appear to be made of two or more layers, and instead appear to be comprised of a single plate structure.

It is acknowledged that the spring (147) of the Becker invention has been defined as being of any suitable type but preferably is a leaf spring. Column 6, lines 10-12). While a leaf spring could in some circumstances be classed as a laminate, it is not defined as such by the Becker specification, or the attached drawings. It also cannot be classed as being substantially static as it is designed to compress upon a force applied to the pedal pad. As such it bears no resemblance to the laminate as used in the subject invention.

The problems already mentioned with the prior art have been around for many years. Because of the failings of the prior art, the applicants have designed a

substantially static pressure sensitive laminate especially for use in the present invention. The incorporation of a laminate in the present invention can be readily fitted to an existing vehicle and comply with certification and safety checks. The thin nature of the laminate also does not distract the driver when operating the brake.

These findings must lead to a reasonable assumption that the incorporation of the laminate to sense a predetermined braking force and apply this to the towed vehicle contains many significant advantages, which if not inventive, have been produced and marketed many years ago.

I trust this response and the amended claim set clarifies the subject invention for the examiner and overcomes any remaining objections. If however the examiner maintains an objection to the subject invention, we would appreciate one further opportunity to further clarify the nature of the invention over the prior art, before the International Preliminary Examination Report is issued.

Yours sincerely

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